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(54) **AERATOR WITH ACTIVE TURF
CALIBRATION OF GROUND SENSOR**

(56) **References Cited**

U.S. PATENT DOCUMENTS

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4,566,543	A	1/1986	Kotani	
5,309,699	A	5/1994	Ehn, Jr.	
5,551,518	A *	9/1996	Stratton	172/4.5
5,984,420	A *	11/1999	Murray et al.	299/1.5
7,293,612	B1	11/2007	Petersen et al.	
8,255,126	B2	8/2012	Hunt et al.	
2008/0257571	A1	10/2008	Keane et al.	
2010/0018726	A1 *	1/2010	Chiocco	172/1
2010/0186360	A1	7/2010	Keski-Luopa	
2011/0213530	A1	9/2011	Hunt et al.	

FOREIGN PATENT DOCUMENTS

JP H0984411 A 3/1997

OTHER PUBLICATIONS

Search Report issued in counterpart application No. GB1500920.2,
dated Jul. 10, 2015 (3 pages).
German Search Report issued in counterpart application No.
102015201095.3, dated Feb. 26, 2016 (7 pages).

* cited by examiner

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(57) **ABSTRACT**

An aerator with active turf calibration of a ground sensor that provides signals to a controller relating to changes in slope of a ground surface. The controller adjusts the position of a coring head based on signals from the ground sensor. The controller determines an offset from a neutral position of the ground sensor based on signals from the ground sensor on a flat surface during aeration compared to the neutral position of the ground sensor on a flat surface from static calibration.

10 Claims, 3 Drawing Sheets

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See application file for complete search history.

